tion, by account, being ten miles nne. from Bird Rocks), wind se., force 10, with furious squalls of rain, barometer (aneroid, error unknown) 29.7 (754.4), and falling rapidly; 4 p. m., same weather, wind occasionally falling light, barometer 29.41 (747.0); 8 p. m., wind blowing with great fury; 9 p. m., barometer reached its lowest, 29.15 (740.4), after which the wind and sea began to moderate; midnight, wind veering to southward, weather foggy, barometer 29.31 (744.5). At 8 a. m. of the 24th sighted Saint Paul's Island, barometer 29.52 (749.8), wind hauling to sw.

11.—This depression appeared north of the fifty-fifth parallel and east of the thirty-fifth meridian on the 27th. It apparently moved slowly in a southeasterly direction until the 29th, when the area of disturbance extended to the fiftieth parallel, and on the 30th the region of least pressure was near the northwestern coast of the British Isles. During the passage of this disturbance the barometer ranged from 29.4 (746.7) to 29.7 (754.4), and strong gales from ssw., sw., w., and nw. prevailed over the ocean between W. 40° and the British coasts and as far south as the forty-ninth parallel.

12.—A deep depression, showing considerable storm-energy, appears to have existed between N. 35° and 40° and W. 60° and 65° on the 28th and 29th; the data as yet to hand are insufficient to determine its origin and subsequent course, the following reports, however, indicate its presence over the region above-mentioned:

Captain Delap, commanding the bark "Mistletoe," reported as follows: "28th, strong gale from ne., heavy rains, and a long, heavy swell from sse., barometer gradually falling—at noon, Greenwich time, of the 28th, in N. 42° 30′, W. 60° 20′, barometer (aneroid, corrected) read 29.85 (758.2), wind ne., force 9—every appearance of a heavy storm; ran the ship w. by s., true, keeping the wind two to three points on the starboard quarter; at midnight (morning of the 29th) wind commenced to gradually haul to the northward; kept the wind three to four points on the starboard quarter; blowing with tremendous force, ship under reefed foresail; very heavy swell from east. Concluding that I was on the nw. edge of a cyclone, I ran the ship until 8 a. m. (ship's time), the wind being then nw. by n., with very high and cross sea. I then hove-to on the port tack, as I concluded that the centre was to the eastward. The barometer fell to 29.11 (739.4), the wind blowing with hurricane force, and accompanied by torrents of rain; the wind gradually hauled to w. at noon, ship's time, when it cleared up and the barometer began to rise; the heavy easterly swell continued from 4 p. m., ship's time, until the 30th." At noon, Greenwich time, of the 29th the barometer read 29.21 (741.9), wind nw., force 10, the ship's position being N. 39° 32′, W. 62° 15′.

The s. s. "Warwick," C. F. Lobbett, commanding, had a strong easterly gale on the 28th, increasing to a whole gale from ne. by evening of the 29th, with very heavy sea from se. The lowest barometer was 29.77 (756.1), at 8 a. m. of the 29th, in N. 41° 55′, W. 62° 0′, the wind shifting to ne. about the time of lowest barometer.

OCEAN ICE.

On chart i are also shown the eastern and southern limits of the region within which icebergs were observed during September, 1885. These limits are determined from reports furnished by shipmasters, and from trustworthy data published in the "New York Maritime Register" and other newspapers.

The easternmost icebergs were observed between the meridians of 46° and 47° W; and the southernmost bergs between the parallels of 45° and 46° N. They were few in number, and were mostly of small dimensions.

Compared with the chart for the preceding month (August, 1885), there is a difference of about four degrees of longitude in the positions of the eastern limits, that for the present month being about 4° west of that for August. The southern limit is about 2° north of that for the preceding month.

The following is a comparison between September, 1885, and the same month in the three preceding years:

Southern limit.			Eastern limit.		
Date.	Lat. N.	Lon. W.	Date.	Lat. N.	Lon. W.
	° ′	° ′		° ′	° ′
September, 1882	.....	.....	September, 1882	.....	.....
September, 1883	48 25	47 10	September, 1883	49 01	44 33
September, 1884	46 06	53 21	September, 1884	47 39	49 14
September, 1885	45 40	48 22	September, 1885	48 40	46 27

Icebergs were reported as follows:

September 1st.—S. S. "Elbe," in N. 46° 9′, W. 47° 5′, passed an iceberg at 5.30 p. m.; also passed another at 5.52 p. m., in N. 46° 7′, W. 47° 12′.

2d.—S. S. "Germanic," in N. 46° 0′, W. 47° 40′, passed five pieces of ice; s. s. "Holland," in N. 45° 51′, W. 47° 48′, passed a small iceberg.

13th.—Bark "Iodine," in N. 51° 0′, W. 50° 36′, passed two large icebergs.

19th.—S. S. "Hibernian," in N. 48° 20′, W. 47° 46′, passed two small icebergs.

21st.—S. S. "Neckar," in N. 47° 22′, W. 46° 54′, passed four icebergs, the largest being about one hundred feet high; temperature of air, 57°.2; water, 51°.8. The s. s. 'City of Chicago," in N. 47° 38′, W. 46° 44′, passed two large icebergs and some small pieces.

23d.—S. S. "Europa," in N. 47° 10′, W. 47° 15′, passed two icebergs; s. s. "British Prince," in N. 47° 14′, W. 46° 57′, passed three icebergs; s. s. "Adriatic," in N. 47° 11′, W. 46° 40′, at 5.45 a. m., passed a medium-sized iceberg and two small pieces near it.

25th.—S. S. "Nymphœa," in N. 48° 10′, W. 47° 14′, passed a large iceberg; s. s. "Amérique," in N. 48° 20′, W. 47° 18′, at 5 p. m., passed an iceberg.

26th.—S. S. "Jersey City," in N. 45° 40′, W. 48° 22′, passed a large iceberg.

29th.—S. S. "Norseman," in N. 48° 40′, W. 46° 27′, passed an iceberg about four hundred feet long and ninety feet high.

SIGNAL SERVICE AGENCIES.

Signal Service agencies have been established in the Maritime Exchange buildings at New York City and Philadelphia, and in the Custom-House, Boston, where the necessary blanks and other information will be furnished to ship-masters.

In pursuance of the arrangements made with the Meteorological Office of London, England, there were cabled to that office from New York during September, 1885, four reports concerning storms and icebergs encountered by vessels in the Atlantic west of the forty-fifth meridian; one message was sent from Boston.

TEMPERATURE OF THE AIR.

[*Expressed in degrees, Fahrenheit.*]

The distribution of mean temperature over the United States and Canada for September, 1885, is exhibited on chart ii by the dotted isothermal lines; and in the table of miscellaneous data are given the monthly mean temperatures, with the departures from the normal, for the various stations of the Signal Service.

In the Gulf States, Rio Grande Valley, Tennessee, extreme northwest, upper Mississippi and Missouri valleys, and middle slope, the mean temperature for September, 1885, has differed but slightly from the normal; the departures in these districts, as shown in the above table, average less than 1°. In the Lake region, Ohio Valley, and on the Atlantic coast, the month has been colder than the average September, the departures from the normal temperature being most marked in the lower lake region and New England, where the average departures, for the districts, were 2°.3 and 2°.9, respectively. In the northern slope, the plateau districts, and on the Pacific coast, the mean temperatures were above the normal, the departures being greatest in the northern slope, north Pacific coast region, and in the northern and southern plateau districts. The following are the most marked departures occurring at Signal

Service stations, the plus and minus signs denoting, respectively, above and below the normal: Fort Assinaboine, Montana, +4°.1; Fort Shaw, Montana, +3°.6; Wickenburg, Arizona, +3°.6; Lewiston, Idaho, +3°.4; Fort Apache, Arizona, +3°.0; Fort Maginnis, Montana, +2°.5; Olympia, Washington Territory, +2°.3; Oswego, New York, —4°.5; Portland, Maine, —3°.9; New Haven, Connecticut, —3°.7; Albany, New York, —3°.4; Mount Washington, New Hampshire, —3°.4; Block Island, Rhode Island, —3°.3; Chincoteague, Virginia, —3°.2; Hatteras, North Carolina, —3°.2; Rochester, New York, —3°.2.

In the following table are given the mean temperatures for the several geographical districts, with the normals and departures, as deduced from Signal Service observations:

Average temperatures for September, 1885.

Districts.	Average for Sept. Signal-Service observations.		Comparison of Sept., 1885, with the average for several years.
	For several years.	For 1885.	
	°	°	°
New England	62.1	59.2	— 2.9
Middle Atlantic States	68.0	66.0	— 2.0
South Atlantic States	74.4	73.4	— 1.0
Florida Peninsula	79.6	80.2	+ 0.6
Eastern Gulf States	75.0	74.3	— 0.7
Western Gulf States	76.1	75.8	— 0.3
Rio Grande Valley	80.6	80.4	— 0.2
Tennessee	70.2	70.3	+ 0.1
Ohio Valley	67.3	65.9	— 1.4
Lower Lake region	63.4	61.1	— 2.3
Upper Lake region	59.0	57.6	— 1.4
Extreme Northwest	54.8	55.2	+ 0.4
Upper Mississippi Valley	64.6	64.0	— 0.6
Missouri Valley	62 0	62.4	+ 0.4
Northern slope	55.2	56.9	+ 1.7
Middle slope	63.8	63.5	— 0.3
Southern slope			
Southern plateau	68.1	69.7	+ 1.6
Middle plateau	62.2	63.3	+ 1.1
Northern plateau	59.0	61.7	+ 2.7
North Pacific coast region	58.8	60.8	+ 2.0
Middle Pacific coast region	67.5	68.4	+ 0.9
South Pacific coast region	67.1	68.8	+ 1.7

DEVIATIONS FROM NORMAL TEMPERATURES.

In the table below are given, for certain stations, as reported by voluntary observers, the normal temperatures for September for a series of years, the mean temperature for September, 1885, and the departures from the normal:

Station.	County.	Normal temperature for September.	Number of years.	Mean temperature for Sept., 1885.	Departure.
Arkansas.		°		°	°
Lead Hill	Boone	72.2	4	70.0	—2.2
California.					
Sacramento	Sacramento	67.7	19	67.3	—0.4
Connecticut.					
Middletown *	Middlesex	61.4	27	59.1	—2.3
Dakota.					
Webster	Day	64.9	3	61.9	—3.0
Illinois.					
Anna	Union	69.3	10	69.2	—0.1
Collinsville	Madison	69.2		66.4	—2.8
Mattoon	Coles	68.4	5	67.5	—0.9
Peoria	Peoria	66.7	30	66.6	—0.1
Riley	McHenry	60.6	24	59.8	—0.8
Sycamore	De Kalb	63.7	4	60.0	—3.8
Indiana.					
Lafayette	Tippecanoe	65.6	5	63.2	—2.4
Logansport	Cass	65.7	26	66.1	+0.4
Mauzy	Rush	65.3	6	64.8	—0.5
Spiceland	Henry	63.7	32	63.2	—0.5
Vevay	Switzerland	68.7	21	66.7	—2.0
Iowa.					
Cresco	Howard	59.4	10	57.8	—1.6
Monticello	Jones	61.5	31	60.5	—1.0
Kansas.					
Independence	Montgomery	70.2	14	67.8	—2.4
Wellington	Sumner	68.5	7	66.2	—2.4
Yates Centre	Woodson	68.3	5	65.8	—2.5
Maine.					
Belfast *	Waldo	60.2	26	57.6	—2.6
Bridgton *	Cumberland	59.1	11	56.3	—2.8
Gardiner	Kennebec	58.5	49	55.7	—2.8
Maryland.					
Fallston	Harford	65.7	14	63.2	—2.5
Massachusetts.					
Amherst *	Hampshire	60.2	48	58.4	—1.8
Cambridge *	Middlesex	61.8	63	58.2	—3.6
Fitchburg *	Worcester	59.9	29	56.9	—3.0
Lowell *	Middlesex	62.3	10	58.8	—3.5
New Bedford *	Bristol	59.2	73	58.8	—0.4
Springfield *	Hampden	63.1	18	60.7	—2.4
Somerset *	Bristol	64.2	15	61.6	—2.7
Taunton *	Bristol	64.4	15	59.0	—5.4
Worcester	Worcester	61.4	45	57.4	—4.0
Nevada.					
Carson City	Ormsby	60.1		62.0	+1.9
New Brunswick.					
Saint John *	Saint John	54.7	25	52.4	—2.3
New Hampshire.					
Concord *	Merrimac	59.9	18	56.6	—3.3
Hanover *	Grafton	57.7	25	54.4	—3.3
New Jersey.					
South Orange	Essex	63.9	16	62.1	—1.8
New York.					
Menand Station	Albany	62.0	4	58.9	—3.1
North Volney	Oswego	60.8	18	57.9	—2.9
Palermo	Oswego	62.8	32	56.4	—6.4
Ohio.					
North Lewisburg	Champaign	64.2	53	64.8	+0.6
Wauseon	Fulton	62.9	15	60.7	—2.2
Pennsylvania.					
Dyberry	Wayne	59.2	19	56.8	—2.4
South Carolina.					
Statesburg	Sumter	73.6	5	71.8	—1.8
Texas.					
New Ulm	Austin	77.7	14	77.8	+0.1
Vermont.					
Lunenburg *	Essex	56.1	37	53.3	—2.8
Newport	Orleans	58.8	11	55.6	—3.2
Strafford *	Orange	59.6	11	58.0	—1.6
Woodstock	Windsor	56.7	18	55.1	—1.6
Virginia.					
Bird's Nest	Northampton	70.5	16	71.7	+1.2
Dale Enterprise	Rockingham	72.9	5	71.1	—1.8
Wytheville	Wythe	63.4	22	63.1	—0.3
Washington Territory.					
Bainbridge Island	Kitsap	58.5	8	60.0	+1.5
West Virginia.					
Helvetia	Randolph	61.7	9	59.9	—1.8
Wisconsin.					
Beloit	Rock	62.1	36	60.5	—1.6
Wausau	Marathon	56.4		57.4	+1.0

* From the "Bulletin of the New England Meteorological Society."

Voluntary observers also report the following notes:

Riley, McHenry county, Illinois: the mean temperature for the first ten days of September, 1885, was 54°.3, the lowest recorded for any corresponding period during the last twenty-four years, and 10°.2 lower than the normal for the first ten days of September.

Monticello, Jones county, Iowa: the highest September mean temperature recorded in the last thirty-one years is 73°.1, for 1865, and the lowest, 51°.0, for 1856.

Fallston, Harford county, Maryland; during the last fourteen years the highest September mean temperature, 69°.4, occurred in 1884, and the lowest, 61°.3, in 1871.

North Volney, Oswego county, New York: the highest mean temperature for September during the last eighteen years is 69°.2, for 1881, and the lowest, 55°.7, for 1871.

Palermo, Oswego county, New York: during the last thirty-two years the highest mean temperature for September, 67°.8, occurred in 1881, and the lowest, 54°, in 1867.

Wauseon, Fulton county, Ohio: during the last fifteen years the highest September mean temperature, 71°.1, occurred in 1881, and the lowest, 57°.2, in 1883. The September extremes for the same period are: maximum, 100°.3, for 1881; minimum, 24°.9, for 1871.

Woodstock, Windsor county, Vermont: the highest mean temperature for September during the last eighteen years is 62°.6, for 1881, and the lowest is 49°.0, for 1871. The extremes for the same period are: maximum, 93°.0, for 1881; minimum, 22°.0, for 1871.

RANGES OF TEMPERATURE.

The monthly, and the greatest and least daily ranges of temperature at Signal Service stations are given in the table of miscellaneous meteorological data.

The monthly ranges were greatest over the plateau districts and in Montana, Dakota, and Minnesota; they were least in

the north Pacific coast region and at stations along the south Atlantic and Gulf coasts.

The following are some of the greatest and least monthly ranges:

Greatest.	°	Least.	°
Phœnix, Arizona	68.8	Key West, Florida	20.2
Fort Yates, Dakota	68.3	Fort Canby, Washington Territory	20.6
Poplar River, Montana	67.3	Indianola, Texas	21.7
Fort Totten, Dakota	66.6	Galveston, Texas	22.2
Saint Vincent, Minnesota	66.0	Cedar Keys, Florida	22.7
Lakeview, Oregon	65.0	Astoria, Oregon	23.0

Mr. H. D. Gowey, voluntary observer at North Lewisburg, Champaign county, Ohio, has forwarded to the Chief Signal Officer a temperature record covering a period of fifty-three years. The following is a summary of the record mentioned:

Month.	Normal temperatures (53 years' observations).	Highest mean.	Year of highest mean.	Lowest mean.	Year of lowest mean.	Mean of maximum (53 years' observations).	Mean of minimum (53 years' observations).	Highest and lowest observed in 53 years.			
								Maximum.	Year.	Minimum.	Year.
	°	°		°		°	°	°		°	
January	27.7	41.0	1880	14.0	'56, '57	54.3	—3.4	70	1876	—26	1873
February	30.3	42.0	1857	19.0	1856	56.0	0.0	70	'57 '61	—22	1856
March	38.0	48.0	1842	27.0	1856	67.5	8.5	79	1875	—16	1839
April	50.6	59.0	1844	39.0	1857	79.0	25.2	86	1873	12	1881
May	61.2	67.0	1880	55.0	'57, '67, 1882	85.3	34.5	94	'74, '77	27	1876
June	68.9	75.0	1874	62.0	1839	88.8	46.0	97	'56, '58	33	1859
July	73.1	86.0	1868	68.0	1848	91.1	51.5	98	1881	43	1846
August	70.6	75.0	1880	64.0	1876	87.6	48.0	98	1874	34	1856
September	64.2	73.0	1881	55.0	1835	85.9	37.7	98	1854	28	1839
October	52.0	64.0	1879	43.0	1869	77.2	27.1	87	1877	18	1843
November	39.2	49 0	1849	29.0	1874	66.2	14.0	76	1876	—11	'57, '74
December	30.0	41.0	1877	19.0	1876	55.5	2.9	69	1875	—20	1884

NOTE.—The annual normal for the period of fifty-three years, as shown by the record, is 50°.82, the highest yearly mean being 54°.26, for 1846, and the lowest yearly mean 46°.80, for 1856, thus showing a range of 7°.46 in the annual means.

FROSTS.

Frosts occurred during September in the several states and territories, as follows:

California.—Fort Bidwell, 25th.

Colorado.—Pike's Peak, 1st, 5th, 6th; Fort Lewis, 7th, 9th, 12th, 13th, 25th, 27th, 28th; West Las Animas, 13th; Montrose, 13th, 27th to 30th.

Connecticut.—North Colebrook, 3d, 6th, 11th, 12th; Bethel, 3d, 6th, 11th, 24th; Hartford, 23d; New Haven, 24th.

Dakota.—Webster, 1st, 3d, 4th, 5th; Fort Buford, 1st, 3d to 6th, 12th, 26th, 27th, 29th; Bismarck, 1st, 3d, 4th, 5th, 17th, 30th; Fort Yates, 1st, 3d to 6th, 9th; Deadwood, 1st, 4th; Huron, 1st, 4th, 5th; Fort Totten, 1st, 5th, 6th, 15th, 30th; Vermillion, 4th; Fort Sully, 4th, 5th, 11th, 30th; Fort Bennett, 4th, 15th, 30th; Yankton, 5th;

Idaho.—Boisé City, 7th, 17th, 26th, 30th; Cœur d'Alene, 25th.

Illinois.—Chicago, 2d; Windsor, 2d, 6th, 13th; Sycamore, 2d, 6th, 23d; Charleston, 2d, 23d; Wilton Centre, 6th, 23d; Rockford, 21st; Mattoon and Riley, 23d.

Indiana.—Logansport, 2d, 6th, 23d, 24th; Lafayette, 2d, 23d; Spiceland, 2d, 23d, 24th; Laconia, 21st; Sunman, 21st, 24th; Indianapolis and Terre Haute, 23d; Greencastle, 23d, 24th; Vevay and Guilford, 24th.

Iowa.—Manchester, 1st, 2d, 5th; Cresco and Humboldt, 1st, 3d, 5th; Cedar Rapids, 2d, 5th; Burlington, 2d, 6th; Monticello, 5th, 23d.

Kansas.—Salina, 6th, 7th; Allison, 30th.

Kentucky.—Louisville and Frankfort, 24th.

Maine.—Cornish, 3d, 7th, 11th, 12th, 24th; Portland, 6th; Buckfield, 6th, 7th, 11th, 12th, 21st, 26th.

Table of comparative maximum and minimum temperatures for September.

State or Territory.	Station.	For 1885.		Since establishment of station.			
		Max.	Min.	Max.	Year.	Min.	Year.
		°	°	°		°	
Alabama	Mobile	90.4	59.8	96.0	1881	53.0	1871
Do	Montgomery	90.7	55.0	97.0	'75, '77, '84	51.5	1876
Arizona	Fort Apache	93.2	38.2	96.0	1883	32.0	1880, 1882
Do	Prescott	89.6	39.4	100.0	1879	29.0	1880
Arkansas	Little Rock	90.0	55.6	97.0	1881	47.0	1881
Do	Fort Smith	90.6	49.1	99.4	1882	39.6	1883
California	San Diego	89.5	56.5	101.0	1883	49.5	1882
Do	San Francisco	87.0	52.0	92.0	1877	50.0	1874, 1880 1881, 1882
Colorado	Denver	89.6	42.5	93.0	1878	28.0	1873
Do	Pike's Peak	47.3	13.0	55.0	1875	6.0	1876
Connecticut	New Haven	83.0	38.5	100.0	1881	35.0	1879
Do	New London	79.4	39.5	92.0	1881	37.0	1879
Dakota	Fort Buford	90.5	29.5	100.0	1882	18.0	1883
Do	Yankton	91.6	37.7	100.0	1881	26.0	1876
Delaware	Del. Breakwater	.....	.....	93.0	1881	51.0	1882
Do	Cape Henlopen	91.1	43.5	.....	.....	.....	.....
Dist. of Columbia	Washington City	90.7	44.0	104.3	1881	38.0	1879
Florida	Jacksonville	92.5	67.9	98.0	1875	56.0	1874
Do	Key West	92.3	72.1	95.0	1872	71.5	1883
Georgia	Augusta	95.2	51.8	97.0	1875	48.0	1876
Do	Savannah	90.3	62.0	96.0	1876, 1877	54.0	1871
Idaho	Boisé City	.....	.....	96.0	1878	30.0	1881, 1882
Illinois	Cairo	85.4	50.6	97.0	1881	42.0	1876
Do	Chicago	81.3	47.1	93.9	1881	37.0	1872, 1876
Indiana	Indianapolis	83.8	38.4	94.5	1881	35.0	1875
Indian Territory	Fort Sill	91.0	52.5	100.0	1881	44.0	1878
Iowa	Davenport	83.0	44.9	94.0	1881	36.0	1879
Do	Keokuk	84.1	46.1	97.0	1881	39.0	'75, '76, '83
Kansas	Dodge City	88.0	48.0	99.3	1881	30.0	1876
Do	Leavenworth	85.5	46.0	101.0	1882	37.0	1876
Kentucky	Louisville	86.2	45.2	99.0	1881	42.0	1875, 1876
Louisiana	New Orleans	92.0	65.8	92.3	1884	58.0	1871
Do	Shreveport	95.2	54.8	101.0	1881	47.0	1881
Maine	Eastport	70.7	38.0	82.8	1884	35.0	1875
Do	Portland	82.1	38.3	94.5	1881	37.0	1875
Maryland	Baltimore	85.9	45.7	101.0	1881	40.0	1873, 1879
Massachusetts	Boston	84.3	38.7	101.5	1881	34.0	1879
Michigan	Alpena	88.0	37.0	93.0	1884	29.3	1883
Do	Detroit	81.3	40.7	97.0	1874	29.8	1883
Minnesota	Saint Paul	88.2	35.4	94.0	1878	30.0	1873
Do	Saint Vincent	82.2	24.0	89.0	1883	17.0	1893
Mississippi	Vicksburg	92.0	53.0	98.0	1881	48.0	1871
Missouri	Saint Louis	84.0	50.1	101.5	1881	40.0	1875
Montana	Fort Benton	93.4	33.6	95.0	1881	14.0	1873
Do	Helena	88.1	37.8	86.0	1880	30.0	1880, 1882
Nebraska	Omaha	88.9	45.5	98.8	1881	30.0	1873
Do	North Platte	90.0	42.9	101.0	1881	21.0	1876
Nevada	Winnemucca	88.4	30.8	94.0	1878, 1880,	22.0	1880, 1881
New Hampshire	Mount Washington	55.0	12.7	65.0	1880	11.0	1879
New Jersey	Atlantic City	80.6	44.0	94.0	1880	43.0	1875
Do	Sandy Hook	85.0	46.5	101.0	1881	40.0	1875
New Mexico	Santa Fé	81.0	40.0	90.0	1879	27.0	1880
New York	Buffalo	82.6	41.0	88.1	1884	35.0	1878
Do	New York City	83.8	43.5	100.2	1881	30.0	1872
North Carolina	Charlotte	89.1	47.6	94.0	1881	43.0	1879
Do	Wilmington	89.0	51.6	96.0	1872	47.0	1879
Ohio	Cleveland	84.2	43.9	98.0	1881	38.0	1875
Do	Cincinnati	84.2	40.9	95.0	1881	41.0	1875
Oregon	Portland	85.0	41.0	90.0	1876	39.0	'73, '77, '82
Do	Roseburg	89.9	37.8	90.0	1877, 1879	35.0	1877
Pennsylvania	Philadelphia	84.8	44.4	101.5	1881	43.0	1879
Do	Pittsburg	87.0	43.3	101.6	1881	35.0	1879
Rhode Island	Block Island	77.7	42.7	86.5	1881	41.5	1883
Do	Newport	.....	.....	88.3	1881	41.0	1879
South Carolina	Charleston	91.3	63.0	94.0	1876	54.0	1879
Tennessee	Knoxville	88.3	44.7	97.1	1881	40.0	1871
Do	Memphis	88.3	51.8	98.0	1881	44.0	1875
Texas	Galveston	90.7	68.5	94.0	1875, 1876	59.0	1875
Do	El Paso	93.2	48.9	104.0	1879	42.0	1880
Utah	Salt Lake City	90.0	42.4	93.0	1875	36.0	1881
Vermont	Burlington	.....	.....	90.0	1880	32.0	1875
Virginia	Lynchburg	90.7	46.2	98.3	1881	40.0	1875, 1879
Do	Norfolk	89.3	51.4	96.0	1880	50.5	1875
Washington Ter.	Dayton	88.4	36.0	91.3	1881	29.0	1881
Do	Olympia	73.9	43.2	81.0	1877	31.0	1877
West Virginia	Morgantown	.....	.....	91.0	1881	37.0	1875
Wisconsin	La Crosse	84.2	42.8	92.0	1873	31.0	1873
Do	Milwaukee	83.8	40.6	94.0	1872, 1874	32.0	1876
Wyoming	Cheyenne	84.8	34.2	88.0	1875	23.0	1878

Massachusetts.—Amherst, 3d, 6th, 11th, 12th, 21st, 24th; Rowe, 3d, 6th, 11th, 12th, 25th, 26th; Mendon, 10th; Westborough, 11th, 12th; Taunton, 11th, 12th, 20th; Heath, 12th; Deerfield, 12th, 21st, 24th, 25th; Dudley, 18th, 21st; Boston, 24th.

Michigan.—Harrisonville, 1st; Swartz Creek, 1st, 5th; Birmingham and Detroit, 2d; Manistique, 2d, 3d, 4th, 7th, 10th, 16th, 23d; Alpena, 2d, 6th, 11th; Lansing, 2d, 6th, 23d; Escanaba, 5th, 6th, 7th, 16th, 22d, 23d; Pentwater, 6th, 23d; Grand Haven, 6th, 23d, 24th; Boyne, 9th, 10th, 23d; Marquette, 10th, 23d, 25th; Traverse City, 22d; Mackinaw City, 23d.

Minnesota.—Northfield, 1st, 3d to 6th; Moorhead, 1st, 3d to 7th, 30th; Rochester, 1st, 3d, 4th, 5th, 18th, 23d; Duluth, 2d, 5th, 7th, 10th; Minneapolis, 3d, 5th, 6th; Saint Vincent, 4th to 18th, 29th, 30th; Saint Paul, 5th.

Montana.—Poplar River, 1st, 3d, 4th, 5th, 17th, 26th, 27th; Fort Maginnis, 5th; Fort Benton, 17th; Fort Shaw, 26th.

Nebraska.—Harvard, 8th; Valentine, 9th.

Nevada.—Carson City, 13th, 26th, 30th; Winnemucca, 26th.

New Hampshire.—Mount Washington, 2d, 5th, 11th, 23d, 24th; Antrim, 11th, 12th, 21st.

New Jersey.—Dover, 3d; Readington, 3d, 6th; Vineland, 24th.

New Mexico.—Fort Wingate, 6th; Fort Stanton, 25th.

New York.—Humphrey, 2d, 6th; Factoryville, 3d, 24th; Menand Station (near Albany), 6th, 7th, 11th, 24th; North Volney, 6th, 20th, 21st, 25th; Albany, 21st; Buffalo, 23d; Palermo and White Plains, 25th.

North Carolina.—Lenoir, Weldon, and Statesville, 24th; Flat Rock, 24th, 25th; Reidsville, 28th.

Ohio.—Toledo and Tiffin, 2d; Garrettsville, 2d, 6th, 17th; Wauseon, 2d, 6th, 17th, 23d; Napoleon, 2d, 6th, 23d; Jacksonborough, 2d, 23d; Westerville and Yellow Springs, 2d, 23d, 24th; Cincinnati, College Hill, North Lewisburg, and Portsmouth, 24th.

Oregon.—Linkville, 11th, 12th; Lakeview, 25th; Fort Klamath, 25th, 26th, 27th, 29th, 30th.

Pennsylvania.—Grampian Hills, 2d, 3d, 7th, 17th; Wellsborough, 2d, 23d; Dyberry, 3d, 17th, 18th, 20th, 21st, 22d, 24th, 25th, 26th; Troy, 5th; Wysox, 23d, 24th, 25th; Tidioute, 24th.

Rhode Island.—Narragansett Pier, 3d.

South Carolina.—Spartanburg, 24th, 25th.

Tennessee.—Ashwood, 21st; Milan and Nashville, 24th.

Vermont.—Stowe, 2d, 3d, 10th, 11th, 17th, 20th, 21st, 23d, 24th, 25th; Woodstock, 3d, 6th; Strafford, 3d, 6th, 7th, 11th, 12th, 20th, 21st, 25th, 26th; Dorset, 5th, 6th, 7th, 11th, 12th, 18th to 21st, 23d to 26th; Lunenburg, 6th, 7th, 11th, 20th, 21st, 26th.

Virginia.—Wytheville, 23d, 24th; Dale Enterprise and Bruington, 24th; Marion, 24th, 25th.

Washington Territory.—Dayton, 26th.

West Virginia.—Helvetia, 24th; Parkersburg, 25th.

Wisconsin.—La Crosse, 1st, 5th, 23d; Neillsville, 4th, 10th, 16th, 18th, 23d; Embarras, 5th, 6th, 7th, 23d; Wausau, 5th, 7th, 23d.

Wyoming.—Fort Bridger, 27th, 28th.

The following reports of injury to crops, etc., by frost, have been received:

Ada, Norman county, Minnesota: a heavy frost occurred in the county on the 1st, almost totally destroying garden vegetables.

Bird Island, Renville county, Minnesota: the buckwheat crop in this vicinity was almost totally destroyed by the frost of the 1st.

Foxborough, Norfolk county, Massachusetts: a heavy frost occurred in this vicinity during the night of the 2d–3d, causing considerable damage to vegetation.

Saint Vincent, Minnesota: reports from various parts of Minnesota state that the frost on the morning of the 3d caused considerable damage. In the vicinity of Moorhead and Willmar the corn crop was almost entirely ruined.

Adrian, Lenawee county, Michigan: it is estimated that the frosts of the 2d and 3d ruined about ten per cent. of the crops of corn, grapes, and tomatoes.

Berlin, Green Lake county, Wisconsin: much damage was done to the cranberry crop by the frost of the 5th.

Hudson, Saint Croix county, Wisconsin: the corn crop in this section was badly damaged by frost on the 5th.

Palmyra, Jefferson county, Wisconsin: considerable damage was done to tender vegetation in this vicinity by the frost of the 5th.

Colfax, Richland county, Dakota: the frosts of the 3d, 4th, and 5th destroyed nearly all garden vegetables in this vicinity; the temperature fell to 29° on the 5th.

Austin, Mower county, Minnesota: corn and garden vegetables were damaged to a considerable extent by frost on the 5th.

Northfield, Rice county, Minnesota: the heavy frost of the 5th caused injury to tender vegetation in the lowlands.

Portland, Maine: reports state that a heavy frost occurred on the 6th in the lowlands near Farmington, Franklin county, destroying corn, vines, etc.

Montrose, Colorado: a killing frost occurred on the morning of the 13th; garden vegetables in this vicinity were destroyed.

Madison, Wisconsin: the late corn was considerably damaged by the frost of the 23d.

Whitewater, Walworth county, Wisconsin: the heavy frost of the 23d caused considerable damage to vegetables.

ICE.

The formation of ice has been reported, as follows:

Dakota.—Bismarck, 3d; Fort Totten 4th; at the latter station ice formed to a thickness of one-quarter of an inch.

Michigan.—Manistique, 23d, first ice of season.

Ohio.—Napoleon, 2d: it has been reported from several localities, that ice formed as thick as window glass, causing considerable damage to corn and tender vines.

Wisconsin.—Embarras, 23d: thin ice formed during the night.

PRECIPITATION.

[*Expressed in inches and hundredths.*]

The distribution of rainfall over the United States and Canada for September, 1885, as determined from reports from more than eight hundred stations, is exhibited on chart iii.

In the following table are shown, for the several geographical districts, the normal September precipitation for a series of years, the average for September, 1885, and the excess or deficiency as compared with the normal:

Average rainfall for September, 1885.

Districts.	Average for September, Signal-Service observations.		Comparison of September, 1885, with the average for several years.
	For several years.	For 1885.	
	Inches.	*Inches*	*Inches.*
New England	3.33	1.74	−1.59
Middle Atlantic States	3.99	1.66	−2.33
South Atlantic States	5.84	7.14	+1.30
Florida Peninsula	5.22	10.34	+5.12
Eastern Gulf States	4.21	7.91	+3.70
Western Gulf States	4.56	8.34	+3.78
Rio Grande Valley	4.46	4.40	−0.06
Tennessee	3.24	4.68	+1.44
Ohio Valley	2.56	3.54	+0.98
Lower lake region	3.09	2.74	−0.35
Upper lake region	3.70	2.51	−1.19
Extreme northwest	2.35	1.19	−1.16
Upper Mississippi Valley	3.57	4.87	+1.30
Missouri Valley	2.27	3.47	+1.20
Northern slope	1.14	0.52	−0.62
Middle slope	1.60	2.26	+0.66
Southern slope			
Southern plateau	1.18	0.44	−0.74
Middle plateau	0.62	0.68	+0.06
Northern plateau	0.79	1.01	+0.22
North Pacific coast region	1.94	2.18	+2.24
Middle Pacific coast region	0.30	1.03	+0.73
South Pacific coast region	0.02	0.02	0.00

The precipitation along the south Atlantic and Gulf coasts was remarkably heavy, the average for the Florida Peninsula and Gulf States being nearly twice as great as the September normal. The rainfall at Galveston, Texas, exceeded by nearly seven inches the largest monthly precipitation (18.41, for September, 1875) recorded at that station since its establishment in 1871. Of this remarkably heavy precipitation, 16.53 fell from the 15th to the 20th. At New Orleans, Louisiana, the precipitation for September, 1885, has been exceeded in but two months during the last fourteen years, viz., 18.68, for May, 1873, and 13.62, for April, 1874, that for September, 1885, being 13.55, or 9.25 in excess of the average. At Jacksonville, Florida, 19.63 fell during the month, this amount having been exceeded in but one month, viz., 21.12, for September, 1878, since observations were begun in 1871. In the south Atlantic states, Tennessee, the upper Mississippi and Missouri valleys, the excess for the districts ranged from 1.20 to 1.44. At Red Bluff, California, the monthly rainfall was 2.91 (all of which fell on the 24th), or 2.49 in excess of the September average. The observer at that station reports that "this is the heaviest rainfall known to have occurred here since 1857."

In the southern plateau, western Texas, at Brownsville,